

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-331997

(43)Date of publication of application : 30.11.2001

(51)Int.Cl.

G11B 17/04

(21)Application number : 2000-148926

(71)Applicant : CLARION CO LTD

(22)Date of filing : 19.05.2000

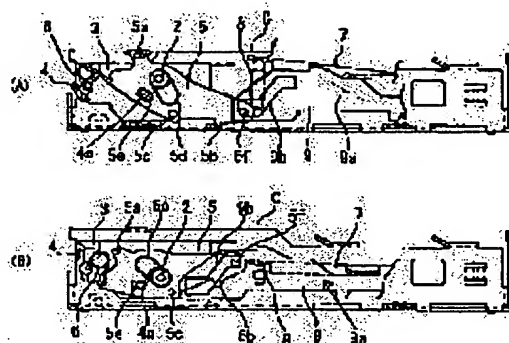
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(54) FLOATING LOCK MECHANISM OF DISK PLAYER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a floating lock mechanism of a disk player which is capable of saving a manufacturing cost with simple constitution by decreasing the number of parts.

SOLUTION: A floating section 1 having members for reproducing disks is supported into a case C of the disk player by plural dampers. The lock mechanism is provided with a lock arm 5 which is disposed movably between a lock state of locking the floating section 1 into the case C and a release position where the floating section 1 is unlocked and is put into a floating state. The mechanism is provided with a loading roller 2 which is disposed movably between a loading position where the roller comes into contact with the disk and a release position where the roller is released from the disk and which is disposed turnably by means of a motor and a torsion spring 6 which energizes the lock arm 5 to the lock position and the loading roller 2 to the loading position.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The floating lock mechanism of the disk player equipped with the lock member which can move between the lock position which is characterized by providing the following, and which fixes the disk reproduction section by which the elastic support was carried out into the disk player, and the release positions which cancel a fixed state. The loading roller formed by the driving source possible [rotation] while being prepared possible [movement of between the loading position which touches a disk, and the release position released from a disk]. the energization which energizes the aforementioned loading roller in a loading position while energizing the aforementioned lock member in a lock position — a member

[Claim 2] The floating lock mechanism of the disk player according to claim 1 which carries out [that the link mechanism which energizes the aforementioned loading roller and the aforementioned lock member in a release position is established while energizing the disk clasper prepared possible / movement of between the sticking-by-pressure position which sticks a disk to the aforementioned disk reproduction section side by pressure, and the release position which releases the aforementioned disk /, and the aforementioned disk clasper to a sticking-by-pressure position, and] as the feature.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] In case this invention performs carrying-in taking out of a disk to the disk reproduction section by which floating support was carried out in a disk player, it relates to the floating lock mechanism which locks floating of the disk reproduction section.

[0002]

[Description of the Prior Art] Generally, the disk player which reproduces disk-like record media (it is hereafter called a disk), such as CD and DVD, is equipped with the disk reproduction section which equipped the interior of a case with a turntable or optical pickup, the disk loading mechanism in which a loading roller performs carrying-in taking out of the disk into a disk player, the disk clamp mechanism in which it equips with a disk on a turntable, etc.

[0003] In order to prevent the sound jump at the time of reproduction especially in the case of the disk player for mount, a case and id KASSHON, and the disk reproduction section prepared in the interior are constituted by another member, and by making both into floating which floated by elastic members, such as a damper and a spring, it is devised so that the vibration at the time of a rolling stock run may not get across to the disk reproduction section inside a case or an id KASSHON shell.

[0004] Moreover, in case this disk player makes the loading roller in a disk loading mechanism stick to a disk by pressure and performs carrying-in taking out of a disk, in order that it may position the disk insertion mouth and the disk reproduction section which were prepared in the id KASSHON side, the floating lock mechanism which fixes the disk reproduction section to a case and id KASSHON side is established.

[0005] Thus, at the time of carrying-in taking out of a disk, while operation in which a loading roller is made to stick to a disk by pressure to a disk loading mechanism is required, operation which locks floating of the disk reproduction section to a floating lock mechanism is required. And at the time of reproduction of a disk, while operation which releases a loading roller from a disk to a loading mechanism is required, operation which cancels the lock of the disk reproduction section to a floating lock mechanism is required.

[0006] By the way, it is common to use the press force in which the force of a motor was used, such as a cam and a link, in sticking-by-pressure operation of a loading roller and lock operation of a floating lock mechanism. However, if the force of a direct motor is applied to a loading roller or the disk reproduction section, since there is no recess, a great pressure will be added or the phenomenon in which backlash arises conversely and a proper pressure cannot be obtained will happen. then -- usually -- power transfer of these cams, links, etc. -- a member -- on the way -- it is alike, elastic members, such as a spring, are made to intervene, and it is made for the suitable pressure for a loading roller or the disk reproduction section to be added

[0007]

[Problem(s) to be Solved by the Invention] however, in the above Prior arts, the disk loading mechanism and the floating lock mechanism were established independently, respectively -- the manufacturing cost was applied, while it accumulated and the part mark of the whole equipment

became and complicated [a mechanism] There was a problem that members, such as a spring for applying a proper pressure to a loading roller or the disk reproduction section especially, were needed for every mechanism.

[0008] It is proposed in order that this invention may solve the trouble of the above conventional technology, and the purpose is in offering the floating lock mechanism of the disk player which cuts down part mark and can save a manufacturing cost by simple composition.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention has the following technical features in the floating lock mechanism of the disk player equipped with the lock member which can move into a disk player between the lock position which fixes the disk reproduction section by which the elastic support was carried out, and the release positions which cancel a fixed state.

[0010] That is, invention according to claim 1 is characterized by having the loading roller formed by the driving source possible [rotation] while being prepared possible [movement of between the loading position which touches a disk, and the release position released from a disk], and the energization member which energizes the aforementioned loading roller in a loading position while energizing the aforementioned lock member in a lock position. since the energization member which gives the energization force to each member is shared in a loading roller and a lock member in the above invention according to claim 1 — a member — curtailment of mark can be aimed at and a manufacturing cost can be saved with simple composition

[0011] While invention according to claim 2 energizes the disk clasper prepared possible [movement of between the sticking-by-pressure position which sticks a disk to the aforementioned disk reproduction section side by pressure, and the release position which releases the aforementioned disk], and the aforementioned disk clasper to a sticking-by-pressure position, it carries out that the link mechanism energize the aforementioned loading roller and the aforementioned lock member to a release position is established as the feature in the floating lock mechanism of a disk player according to claim 1. since the mechanism to which a disk clasper, a loading roller, and a lock member are moved is shared by the link mechanism in the above invention according to claim 2 — the further member — curtailment of mark is realizable

[0012]

[Embodiments of the Invention] The gestalt of operation of this invention is explained below with reference to drawing 1 -3.

(1) As shown in composition 1-1. floating ***** of the gestalt of operation, and drawing 1 , the floating section 1 is constituted by the member for disk reproduction prepared on plate 1b by which floating support was carried out with two or more dampers and springs (not shown) which consist of an elastic member in the case C of a disk player, and this plate 1b. Although the member for this disk reproduction does not carry out illustration, the pickup delivery mechanism and disk which are made to move the optical pickup which reads the information on a disk, and optical pickup in the direction of a path of a disk are laid, and it has the turntable rotated by th spindle motor.

[0013] 1-2. As shown in the disk loading mechanism floating section 1 drawing 1 -3, the loading roller 2, the upper guide 3, and the ROWA guide 4 are formed in the disk insertion mouth side. The loading roller 2 is formed possible [rotation] by the drive (not shown) which operates by the motor. The upper guide 3 is a member which pinches a disk between the loading rollers 2 and guides the movement. The ROWA guide 4 is a guide which is arranged by the lower part of the upper guide 3 and leads a disk to the loading roller 2.

[0014] And the loading roller 2 is formed possible [movement of between the disk loading position (upper part in drawing 2) which is stuck to a disk by pressure and conveys a disk between the upper guides 3, and the release position (lower part in drawing 2) which evacuates caudad and releases a disk]. In addition, the ROWA guide 4 is also formed possible [rotation] with movement of the loading roller 2. In addition, when disk insertion is detected by the sensor which is not illustrated, and when disk eccrisis directions are inputted by button grabbing by the

user etc., the drive made to rotate the loading roller 2 is constituted so that it may operate to an opposite direction, respectively.

[0015] 1-3. As shown in the lock arm floating section 1 at drawing 2 and drawing 3, the lock arm 5 is formed in the position corresponding to the edge of right and left of the loading roller 2 at the bilateral symmetry, respectively. This lock arm 5 is formed possible [rotation] focusing on shank 5c between the lock position where the lock presser foot stitch tongues 5a and 5b formed in an upper edge and every one lower edge contact some cases C, and the release position where the lock presser foot stitch tongues 5a and 5b separate from Case C. The end of the torsion spring 6 is attached in the end section (left end section in drawing 2) of this lock arm 5. The other end of the torsion spring 6 is attached in the floating section 1, and it is constituted so that the lock arm 5 may be energized by the lock position.

[0016] Moreover, slide section 5e for a guide whose salient 4a formed in 5d of slide sections for rollers which are the hole or slot where the edge of right and left of the loading roller 2 was inserted in the lock arm 5 possible [slide movement], and the edge of right and left of the ROWA guide 4 is the hole or slot inserted in possible [slide movement] is formed.

[0017] 1-4. The clamp mechanism which sticks a disk by pressure on the turntable in the clamp mechanism floating section 1 is constituted by the clamber arm plate 7 with which clamber 7a which stands face to face against a turntable, and this clamber 7a were attached. The clamber arm plate 7 has the function to which clamber 7a is moved up and down with the disk insertion mouth side in the floating section 1 by being prepared possible [rotation] focusing on the shank (not shown) prepared in the opposite side. And the clamber arm plate 7 is energized by the extension spring 8 in the direction (lower part in drawing 2) which clamber 7a sticks to a disk by pressure.

[0018] 1-5. The link plate 9 is formed in the right-hand side section of the link plate floating section 1 possible [slide movement to order] by the drive which is not illustrated. If ramp 9a which contacts the edge of the clamber arm plate 7 of a clamp mechanism is formed in the upper limit of this link plate 9 and the link plate 9 moves back, it is constituted so that this ramp 9a may resist the energization force of an extension spring 8 and may energize the clamber arm plate 7 up.

[0019] Moreover, inclination-cam-die section 9b 5f of whose salients prepared in the other end (right end section in drawing 2) of the lock arm 5 is the hole or slot inserted in possible [slide movement] is formed in the link plate 9. This inclination-cam-die section 9b is constituted so that the loading roller 2 and the ROWA guide 4 may be moved in the direction which separates from a disk while resisting the non-influence of the torsion spring 6, rotating the lock arm 5 and making the lock presser foot stitch tongues 5a and 5b release from Case C, when the link plate 9 moves to the front.

[0020] In addition, when having come to the position whose turntable a disk center suits by the sensor which is not illustrated is detected, and when disk eccentric directions are inputted by a user's button grabbing etc., the drive to which the link plate 9 is moved is constituted so that it may operate to an opposite direction, respectively.

[0021] (2) an operation of the gestalt of operation — explain an operation of the gestalt of the above operations below First, in disk a non-inserted initial state, as shown in drawing 2 (A) and drawing 3 (A), according to the energization force of the torsion spring 6, the lock arm 5 is in the lock position where the lock presser foot stitch tongues 5a and 5b contact some cases, and the loading roller 2 has it in a disk loading position. Since the link plate 9 is back (right-hand side in drawing 2), and the ramp 9a resists the energization force of an extension spring 8 and is energizing the clamber arm plate 7 up at this time, clamber 7a deviated from the turntable and has done the crevice for disk insertion.

[0022] If a disk is inserted from a disk insertion mouth from this state, this will be detected by the sensor and the loading roller 2 will start rotation from it. A disk is drawn by rotation of the loading roller 2 and is conveyed on a turntable while it is pinched between the loading roller 2 and the upper guide 3. And if having come to the position whose turntable a disk center suits by the sensor is detected, since the link plate 9 will carry out slide movement ahead (left-hand side in drawing 2), as shown in drawing 2 (B) and drawing 3 (B), the clamber arm plate 7 is

released from the energization force of ramp 9a, the clamber arm plate 7 rotates to a turntable side according to the energization force of an extension spring 8, and a disk center is pinched by clamber 7a and the turntable.

[0023] Since inclination-cam-die section 9b energizes 5f of salients, the lock arm 5 resists the energization force of the torsion spring 6 and it rotates according to movement to the front of the link plate 9, while the lock presser foot stitch tongues 5a and 5b release Case C on the other hand, along with 5d of slide sections for rollers, and slide section 5e for a guide, the loading roller 2 and the ROWA guide 4 move in the direction which separates from a disk.

[0024] As mentioned above, after being equipped with a disk on a turntable, reproduction by optical pickup is performed to the disk which rotates on a turntable. And after disk reproduction, since the link plate 9 moves back, and ramp 9a will resist the energization force of an extension spring 8 and will energize the clamber arm plate 7 up with a drive as shown in drawing 2 (A) and drawing 2 (A) if disk discharge directions are inputted by button grabbing by the user etc., clamber 7a goes up and the disk on a turntable is released.

[0025] Since the loading roller 2 also starts rotation and the inclination-cam-die section 9b energizes 5f of salients up by the setback of the link plate 9 at this time, the lock arm 5 rotates and it comes to the lock position where the lock presser foot stitch tongues 5a and 5b contact the edge of Case C. Since the loading roller 2 and slide section 5e for a guide move up and a disk is simultaneously pinched by the loading roller 2 and the upper guide 3 along with 5d of slide sections for rollers, and slide section 5e for a guide, a disk is discharged with the rotating loading roller 2.

[0026] (3) the effect of the gestalt of operation -- the case where a respectively independent member is used since the member which gives the sticking-by-pressure force over a disk to the loading roller 2, and the member which gives the energization force of the lock by the lock arm 5 were shared with the torsion spring 6 according to the gestalt of these above operations -- comparing -- a member -- mark are cut down and simplification and the cost reduction of composition can be realized

[0027] Since the torsion spring 6 is used especially, in each rotation edge of the lock state of the lock arm 5, and a lock release state, the suitable energization force according to the angle can be worked.

[0028] Moreover, since the member which rotates the clamber arm plate 7 for clamber 7a rise and fall, and the member which rotates the lock arm 5 are shared with the link plate 9, simplification and cost reduction of curtailment of the further part mark and composition are realizable.

[0029] (4) The gestalt this invention of other operations is not limited to the gestalt of the above-mentioned operation, and the quality of the material of each part material, a size, a configuration, quantity, etc. can be changed suitably. For example, the composition of the drive made to rotate the loading roller 2, the drive to which the link plate 9 is moved, the clamber arm plate 7, clamber 7a, etc. can apply all well-known mechanisms.

[0030] Moreover, it is not limited to what also showed the configuration of the lock arm 5 or the link plate 9 with the gestalt of the above-mentioned operation. Moreover, the energization member which gives the sticking-by-pressure force over a disk and the energization force of the lock by the lock arm 5 to the loading roller 2 may not be limited to the torsion spring 6, but may be the spring of other configurations. Furthermore, even if it is a thing only for reproduction, as long as the disk player to which this invention is applied may be for record reproduction and is equipment for a disk-like record medium, it may be equipment for the record medium of what kind and size.

[0031]

[Effect of the Invention] As explained above, according to this invention, part mark can be cut down and the floating lock mechanism of the disk player which can save a manufacturing cost can be offered by simple composition.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the plan showing the gestalt of one operation of the floating lock mechanism of this invention.

[Drawing 2] It is the right lateral view showing (B) at the time of (A) and disk reproduction at the time of disk loading of the gestalt of operation of drawing 1 .

[Drawing 3] It is the right lateral view showing the relation between the lock arm in (B), and a ROWA guide at the time of (A) and disk reproduction at the time of disk loading of the gestalt of operation of drawing 1 .

[Description of Notations]

1 — Floating section

1b — Plate

2 — Loading roller

3 — Upper guide

4 — ROWA guide

4a, 5f — Salient

5 — Lock arm

5a, 5b — Lock presser foot stitch tongue

5c — Shank

5d — The slide section for rollers

5e — The slide section for a guide

6 — Torsion spring

7 — Clamper arm plate

7a — Clamper

8 — Extension spring

9 — Link plate

9a — Ramp

9b — Inclination-cam-die section

[Translation done.]